

WHAT IS CLAIMED IS:

1. A separator for a fuel cell, comprising:
a substrate made of a metal material; and
a conductive polymer film formed on a surface of said
5 substrate.

2. A separator for a fuel cell, comprising:
a substrate made of a metal material;
a passive-state layer that is superior in conductivity
10 and corrosion resistance formed on a surface of said substrate;
and
a conductive polymer film is formed on the passive-state
layer.

15 3. The separator for a fuel cell according to claim 1,
wherein the conductive polymer film is not subjected to baking.

4. The separator for a fuel cell according to claim 2,
wherein the conductive polymer film is not subjected to baking.

20 5. A manufacturing method of a separator for a fuel cell,
wherein a conductive polymer film is formed on a surface of a
substrate made of a metal material by electrolytic
polymerization.

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6. A manufacturing method of a separator for a fuel cell, wherein a conductive polymer film is formed, by electrolytic polymerization, on a passive-state layer that is formed on a surface of a substrate made of a metal material.

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7. A manufacturing method of a separator for a fuel cell, comprising the steps of:

forming groove-like gas flow passages by bending a substrate made of a metal material; and

10 forming a conductive polymer film on a surface of the substrate by electrolytic polymerization.

8. A manufacturing method of a separator for a fuel cell, comprising the steps of:

15 forming groove-like gas flow passages by bending a substrate made of a metal material;

forming a passive-state layer on a surface of the substrate; and

20 forming a conductive polymer film on the passive-state layer by electrolytic polymerization.

9. The manufacturing method of a separator for a fuel cell according to claim 5, wherein the electrolytic polymerization is performed by using the substrate as an electrolytic polymerization electrode.

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10. The manufacturing method of a separator for a fuel cell according to claim 6, wherein the electrolytic polymerization is performed by using the substrate as an electrolytic
5 polymerization electrode.

11. The manufacturing method of a separator for a fuel cell according to claim 7, wherein the electrolytic polymerization is performed by using the substrate as an electrolytic
10 polymerization electrode.

12. The manufacturing method of a separator for a fuel cell according to claim 8, wherein the electrolytic polymerization is performed by using the substrate as an electrolytic
15 polymerization electrode.